

Ammonium nitrate

Other names:	ammonium nitrate [AN] nitric acid ammonium salt
Inchi:	InChI=1S/H4N2O3/c1-5-2(3)4/h1H4
InchiKey:	ASFIXDPWCNUKTK-UHFFFAOYSA-N
Formula:	H4N2O3
SMILES:	NO[N+](=O)[O-]
Mol. weight [g/mol]:	80.04
CAS:	6484-52-2

Physical Properties

Property code	Value	Unit	Source
gf	-53.88	kJ/mol	Joback Method
hf	-152.52	kJ/mol	Joback Method
hfus	13.50	kJ/mol	Joback Method
hsub	174.90	kJ/mol	NIST Webbook
hvap	45.24	kJ/mol	Joback Method
log10ws	-0.41		Crippen Method
logp	-0.932		Crippen Method
mcvol	44.130	ml/mol	McGowan Method
pc	7355.34	kPa	Joback Method
tb	446.19	K	Joback Method
tc	677.44	K	Joback Method
tf	338.86	K	Joback Method
tt	324.15	K	Influence of selected potassium salts on thermal stability of ammonium nitrate
vc	0.165	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	85.28	J/mol×K	446.19	Joback Method
cpg	88.79	J/mol×K	484.73	Joback Method
cpg	92.19	J/mol×K	523.27	Joback Method

cpg	95.46	J/mol×K	561.82	Joback Method	
cpg	98.59	J/mol×K	600.36	Joback Method	
cpg	101.57	J/mol×K	638.90	Joback Method	
cpg	104.40	J/mol×K	677.44	Joback Method	
hsubt	178.70	kJ/mol	393.50	NIST Webbook	
psub	5.62e-05	kPa	330.60	The vaporization of NH4NO3	
psub	1.12e-05	kPa	315.50	The vaporization of NH4NO3	
psub	1.79e-05	kPa	320.80	The vaporization of NH4NO3	
psub	2.11e-05	kPa	321.80	The vaporization of NH4NO3	
psub	2.14e-05	kPa	322.10	The vaporization of NH4NO3	
psub	3.82e-05	kPa	327.50	The vaporization of NH4NO3	
psub	8.07e-06	kPa	313.20	The vaporization of NH4NO3	
psub	6.05e-05	kPa	332.10	The vaporization of NH4NO3	
psub	7.83e-05	kPa	333.90	The vaporization of NH4NO3	
psub	7.82e-05	kPa	334.20	The vaporization of NH4NO3	
psub	1.05e-04	kPa	335.80	The vaporization of NH4NO3	
psub	1.39e-04	kPa	340.20	The vaporization of NH4NO3	
psub	1.60e-04	kPa	341.40	The vaporization of NH4NO3	
psub	1.79e-04	kPa	342.60	The vaporization of NH4NO3	
psub	2.18e-04	kPa	344.60	The vaporization of NH4NO3	
psub	2.33e-04	kPa	344.80	The vaporization of NH4NO3	
psub	2.40e-04	kPa	345.70	The vaporization of NH4NO3	
psub	2.62e-04	kPa	345.90	The vaporization of NH4NO3	
psub	2.56e-04	kPa	346.50	The vaporization of NH4NO3	
psub	2.57e-04	kPa	346.50	The vaporization of NH4NO3	
psub	2.66e-04	kPa	347.10	The vaporization of NH4NO3	

Sources

Densities, Viscosities and Adiabatic Compressibilities of Some Mineral Salts in Water at Different Temperatures: Crippen Method:

<https://www.doi.org/10.1021/je030205y>

<http://webbook.nist.gov/cgi/cbook.cgi?ID=C6484522&Units=SI>

<http://pubs.acs.org/doi/abs/10.1021/ci990307l>

<https://www.doi.org/10.1021/acs.jced.7b01015>

<https://www.doi.org/10.1021/acs.jced.8b01052>

<https://www.doi.org/10.1021/je900927a>

https://www.chemeo.com/doc/models/crippen_log10ws

<https://www.doi.org/10.1016/j.jct.2018.05.018>

<https://www.doi.org/10.1016/j.fluid.2005.07.011>

<https://www.doi.org/10.1021/je201390r>

<https://www.doi.org/10.1016/j.jct.2010.01.012>

<https://www.doi.org/10.1021/je500284p>

<https://www.doi.org/10.1016/j.jct.2012.04.001>

<https://www.doi.org/10.1016/j.tca.2019.178313>

<https://www.doi.org/10.1021/je3008233>

<http://link.springer.com/article/10.1007/BF02311772>

https://en.wikipedia.org/wiki/Joback_method

<https://www.doi.org/10.1021/je400402n>

<https://www.doi.org/10.1016/j.fluid.2016.12.003>

<https://www.doi.org/10.1021/je9009267>

Phase Equilibria of the Na⁺, NH₄⁺/SO₄²⁻, NO₃⁻-H₂O Quaternary Equilibrium Study in the 310 K - 333.15 K: NH₄NO₃ + H₂O System at Temperature 278.15 to 323.15 K: Transitions of Calcium Nitrate + Ammonium Nitrate + Water Mixtures: Crippen Method:

Electrostriction of water and lower alcohols around ammonium nitrate - Water activity and activity coefficients of the mixed electrolytes {yNH₄Cl + (NH₄)₂SO₄ + H₂O, NH₄NO₃ + H₂O, and (NH₄)₂SO₄ + NH₄NO₃ + H₂O} Solutions at T = (278.15 to 333.15) K: Viscosity of Ammonium Nitrate + Formamide Mixtures: Volumetric properties of ammonium nitrate in N,N-dimethylformamide: Influence of selected potassium salts on thermal stability of ammonium nitrate: Electrical Conductivity of Aqueous Ethanol Solutions Containing Ammonium Salts under High Pressure at 298 K: Joback Method:

Temperature and Concentration Dependences of the Electric Conductivity of Aqueous Solutions with additives at a temperature range of 298.15 K and 15 K: Experimental data and results on the thermodynamic properties in Low-Melting Phase Change Materials:

Legend

cp _g :	Ideal gas heat capacity
g _f :	Standard Gibbs free energy of formation
h _f :	Enthalpy of formation at standard conditions
h _{fus} :	Enthalpy of fusion at standard conditions
h _{sub} :	Enthalpy of sublimation at standard conditions
h _{subt} :	Enthalpy of sublimation at a given temperature
h _{vap} :	Enthalpy of vaporization at standard conditions
log _{10ws} :	Log10 of Water solubility in mol/l
log _p :	Octanol/Water partition coefficient
mc _{vol} :	McGowan's characteristic volume
p _c :	Critical Pressure
p _{sub} :	Sublimation pressure
t _b :	Normal Boiling Point Temperature
t _c :	Critical Temperature

tf: Normal melting (fusion) point
tt: Triple Point Temperature
vc: Critical Volume

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